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SCOPING MEETING FOR A POSSIBLE IPCC SPECIAL REPORT ON MANAGING THE RISKS OF EXTREME EVENTS TO ADVANCE CLIMATE CHANGE ADAPTATION

(Submitted by the Secretariat)

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Scoping Meeting for a possible IPCC special report on managing the risks of extreme events to advance climate change adaptation

Background

At the 29th Session of the Panel Norway introduced a proposal prepared with the International Strategy for Disaster Reduction (ISDR), for a Special Report on managing risks of extreme events to advance climate change adaptation. The Panel agreed in principle to convene a scoping meeting early in 2009 and approved a budget of 203,400 CHF for that meeting, which equals 40 participants from developing and transition countries funded by the IPCC Trust Fund. The scoping meeting should clearly identify the objectives and content of a possible special report with proper input from the three Working Groups, while respecting the framework and guidelines for preparing Special Reports. The Panel invited Norway to submit a revised proposal to the Bureau and asked the Bureau to prepare the outline for the scoping meeting.

Attached revised proposal is submitted for consideration by the IPCC Bureau. A representative of Norway has been invited to present the proposal to the Bureau.

PROPOSAL FOR AN IPCC SPECIAL REPORT ON
EXTREME EVENTS AND DISASTERS: MANAGING THE RISKS

PROPOSED BY NORWAY
AND THE SECRETARIAT OF THE
INTERNATIONAL STRATEGY FOR DISASTER REDUCTION (ISDR) SYSTEM

There is increasing recognition of the linkages between disaster risk reduction and adaptation to climate change, as climate change alters not only physical hazards but also vulnerability. A recognition of the need to learn from long experiences in managing and reducing the risk of extreme climate events—such as floods, droughts, storms and extreme temperatures—has not yet led to the type of comprehensive assessment required to guide UNFCCC Parties in their adaptation activities.

Parties to the UNFCCC acknowledged the relevance of disaster risk reduction to advance adaptation in the December 2007 Bali Action Plan, calling for enhanced action on risk management and risk reduction strategies, including risk transfer mechanisms such as insurance, and disaster reduction strategies to lessen the impact of disasters on developing countries[1]. Moreover, at the UNFCCC Subsidiary Bodies meeting in Bonn in 2008, in the context of the Nairobi Work Programme, Parties requested further information on the inclusion of disaster risk reduction strategies into national policies and programmes[2]. Similarly, the IPCC Fourth Assessment Report (AR4), in addition to identifying observed and projected change in extreme events, recognised that "Reducing vulnerability to current climatic variability can effectively reduce vulnerability to increased hazard risk associated with climate change"[3]. To date, however, there has been no comprehensive assessment of the disaster risk reduction and management ***policies and measures*** that can inform climate change adaptation.

> ***Has there been a change in extreme events like heat waves, droughts, floods, and hurricanes?***
> *(*IPCC, *Climate Change 2007: The Physical Science Basis, Frequently Asked Question 3.3):*
>
> "Since 1950, the number of heat waves has increased and widespread increases have occurred in the numbers of warm nights. The extent of regions affected by droughts has also increased as precipitation over land has marginally decreased while evaporation has increased due to warmer conditions. Generally, numbers of heavy daily precipitation events that lead to flooding have increased, but not everywhere. Tropical storm and hurricane frequencies vary considerably from year to year, but evidence suggests substantial increases in intensity and duration since the 1970s. In the extratropics, variations in tracks and intensity of storms reflect variations in major features of the atmospheric circulation, such as the North Atlantic Oscillation."

1. The case for a Special Report

The risk of more complex, frequent, intense or unpredictable climate-related extreme events associated with global temperature increase, changing precipitation patterns and sea-level rise coupled with both gradual and non-linear change to ecosystems and natural resources, suggests the need for a renewed focus on the ways that disaster risk reduction and adaptation can influence the context in which extreme events and climate change occur. Extreme events refer to events related to climate change that are rare at a particular place and time of year, and the term encapsulates both events of limited duration and events that persists for longer periods of time (see box below). The report will only cover events and disasters which are related to climate change. The severity of an event is also relevant to the resulting impacts and thus needs to be considered. AR4 identified the usefulness of taking a ***risk perspective*** in order to identify synergies to "promote sustainable development, reduce the risk of climate-related damages and take advantage of climate-related opportunities"[4].

Definition of extreme event

The IPCC AR4 Synthesis Report defines an extreme weather event as: "An event that is rare at a particular place and time of year. Definitions of "rare" vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th *percentile* of the observed probability density function. By definition, the characteristics of what is called *extreme weather* may vary from place to place in an absolute sense. Single extreme events cannot be simply and directly attributed to *anthropogenic climate change*, as there is always a finite chance the event in question might have occurred naturally. When a pattern of extreme weather persists for some time, such as a season, it may be classed as an *extreme climate event*, especially if it yields an average or total that is itself extreme (e.g., *drought* or heavy rainfall over a season)."

The proposed Special Report is meant to cover both *extreme weather events* and *extreme climate event.*

Governments planning adaptation action would benefit from a review of the guides, frameworks and tools used by various institutions, organizations and communities to build the institutional basis for reducing vulnerability and risk; to develop early warning systems; to strengthen community capacity and social resilience, particularly among the most vulnerable; to improve construction practices; and to establish preparedness to respond to inevitable climate impacts. Yet there has not been a systematic assessment of Governments' experience in risk reduction ***practices*** for climate change adaptation. AR4 reviewed those practices that are specifically identified as adaptation efforts. However, it did not review the wide range of efforts undertaken worldwide by Governments and communities to promote and implement disaster risk reduction, sustainable development, and environmental risk management. An in-depth assessment that determines which practices are the most successful, with information on appropriate contexts, cost and social consequences, and potential constraints, would provide concrete guidance to Governments in planning and implementing adaptation activities. A systematic review would also enable governments to identify those existing practices that should be strengthened because they provide important synergies.

Norway has offered to host a scoping workshop to assess whether a Special Report should be undertaken on the management of extreme events to advance adaptation. To further assist the IPCC in its decision making, Norway has undertaken a study on the humanitarian consequences of climate change and compiled a detailed bibliography of relevant literature. Preliminary findings indicate that ample peer-reviewed literature on this topic is available for review.

For the reasons described above, Norway and the International Strategy for Disaster Reduction System[5] propose that the IPCC undertake a Special Report to assess policies, measures, tools and practice for managing extreme events risk to advance effective adaptation. The proposed Special Report is consistent with the IPCC framework and criteria for establishing priorities for IPCC reports[6], in particular the aim to "strive to serve the policy community with relevant information in a pro-active fashion." It also meets the other priority guidelines: sufficient scientific literature exists; the primary audience is the UNFCCC and the target is the development of the post-2012 agreement and adaptation plans; the scientific community is available; and the topic is specific in scope.

2. Policy linkages with risk reduction

Disaster risk reduction and adaptation to climate change share the same ultimate goal of reducing vulnerability to weather and climate hazards. Over the past 30 to 40 years, a large body of knowledge has been accumulated in the field of disaster risk reduction, especially regarding weather- and climate-related hazards, which are responsible for 76 percent of disasters worldwide[7].

Disaster risk reduction efforts are guided by *The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*, to which 168 Governments agreed in Hyogo, Kobe, Japan, in 2005[8]. The Framework aims for "the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries." As part of its text, Governments agreed to integrate climate change adaptation and disaster risk reduction through:

(i) The identification of climate-related disaster risks;
(ii) The design of specific risk reduction measures; and
(iii) The improved and routine use of climate risk information by planners, engineers and other decision makers.

3. Contribution to international and national efforts

The Special Report proposed would contribute to the goals of the UNFCCC[9] and to the work of its Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change. The Nairobi Work Programme is structured around nine areas of work, including "Climate Related Risks and Extreme Events". The objective of this area is to promote understanding of impacts of, and vulnerability to, climate change, current and future climate variability and extreme events, and the implications for sustainable development.

The Special Report will complement and inform the work done within the Nairobi Work Programme on collecting and analysing information on adaptation actions and advances done towards integrating disaster risk reduction strategies and climate change adaptation into national policies and programmes.

The assessment would inform ongoing work under the UNFCCC with respect to adaptation to climate change by identifying practical measures to reduce risk. It would likewise assist the implementation of the Hyogo Framework.

The proposed assessment would also contribute to improved understanding of the implications of climate-related risks for the Millennium Development Goals and the achievement of sustainable development. It would help Government officials to frame the issues of climate change adaptation and disaster risk reduction in the context of national development efforts in particular sectors. The assessment would provide a tool to gain the support of policy makers and strategic partners to promote more effective and "climate resilient" investment, as well as international cooperation and assistance.

Ultimately the knowledge generated by the assessment would enable Governments and communities to jump-start the implementation of adaptation activities and proceed confidently in a systematic and well-targeted fashion. It would also stimulate the development of scientific and technical networks in many countries, which in turn would assist their Governments in the implementation of adaptation.

4. The availability of scientific information

A preliminary bibliography[10] shows that there is substantial literature available for such an assessment. This literature covers both peer-reviewed literature, academic books and reports, and literature that is produced by agencies and NGOs. In addition there are a number of platforms and initiatives, such as the Community Risk Assessment Toolkit (Provention), Climate Guide (Red Cross/Red Crescent Societies), Community Based Adaptation Exchange (International Institute on Environment and Development), weADAPT (Stockholm Environment Institute), the UNFCCC Nairobi Work Programme and the ISDR System thematic platforms, such as those on early warning, environment, climate change and disaster risk and wildland fire that produce and assess available information from the disaster risk reduction field and the climate change adaptation field. Thematically this literature covers new science on extreme events and climate variability, disasters and impacts, social vulnerability, and responses including both disaster risk reduction and climate change adaptation.

5. Proposed assessment outline and issues for the scoping meeting

The proposed IPCC Special Report[11] would build on the IPCC AR4 to provide more specialized and detailed information on the nexus between climate change adaptation, disaster risk reduction and sustainable development through the assessment of policies, measures, tools and practices to reduce disaster risk. In addition to AR4 the report may also take into account new scientific results relevant to climate related extreme events. We suggest that results and ongoing activities are presented at the scoping meeting, and that an outline for the Special Report is developed. The meeting will combine presentations in plenary by invited experts and scientists, work on the outline of the Report in parallel groups, and present plenary discussion of the group results. Topics that might form the basis of the assessment and the scoping meeting include:

1. **Climate-related extreme events and observed changes**
   Definitional issues concerning extreme events, climate variability and severity of events.
   Nature, frequency, intensity and duration of present day climate-related extreme events.
   Trends in extreme events including regional distribution and disaster hotspots.
   Attribution of the observed changes.

2. **Observed impacts of extreme events on the natural and human environment**
   Interpretation of the links between extreme events, relevant hazard phenomena[12], and disasters, and their impacts on ecosystems and the built environment.
   Complex phenomena, non-linearity, and the role of different spatial scales.
   Ecological, economic and social impacts of climate-related disasters and wider implications for human security and assistance, development and equity.
   Relevant climate-related events (see the box on page 1): Heat waves, droughts, floods, and hurricanes. The scoping workshop may wish to consider a list of events relevant for assessment in the Special report.

3. **Vulnerability to extreme events, drivers, trends and distribution**
   The nature of the disaster process - social and institutional factors, in particular vulnerability arising from poverty, unplanned settlements, environmental degradation, etc.
   Vulnerability of ecosystems, natural resources and human societies.
   Future vulnerability related to development pathways.
   Societal dimensions of risk, including spatial planning and land use change.
   Processes and patterns of risk accumulation.
   Coping capacities, perception of risk, multiple stressors.
   Particular vulnerable groups, regions, sectors and systems.

4. **Current practice in reducing vulnerability and disaster risk**
   Policies, tools and practices by Governments, institutions, risk assessment, early warning, emergency management etc.
   Relevant sectors may include agriculture and food security, human health, water management, energy investments, settlements and infrastructure, costal zones, urban areas Community-level risk reduction and adaptation by region, and experience with technologies and coping practices, local and traditional knowledge.
   Case studies[13] from particularly vulnerable ecosystems, sectors and communities by region.
   Assessment of adequacy of current practice.
   Assessment of costs of implementation of current practices.

5. **Future projections extreme events and disasters**

   Future frequency and strength of extreme events, including new hazards, implications of climate variability, complex extremes and regional differences.

   Possibilities for downscaling on local level and long term forecast of extreme events.

   Projected trends in disaster occurrence and regional distribution.

   Projected trends in key vulnerabilities of human and biophysical systems.

6. **Strategies for reducing the risks related to future extreme events**

   Planning and development: increasing resilience and capacity to cope and adapt, mapping of risks, sectoral and cross-sectoral approaches.

   Disaster management and emergency preparedness, monitoring and early warning, recovery and rehabilitation.

   Lessons learned from current risk management and adaptation practices.

   Integrating risk reduction and adaptation at institutional, national, regional and local levels.

   Measures by institutions and humanitarian organizations.

   Costs, benefits, social and environmental consequences, global and aggregate impacts.

   Costs related to risk-reduction practices for adaptation.

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7. **Towards a sustainable and resilient future**

   Integration of disaster risk reduction and adaptation into planning and actions at national, regional and local levels.

   Synergies between short term coping and long term planning.

   Integration of disaster risk, climate change mitigation and development strategies.

   Impacts of future climate change and implications for regional, local and sectoral development, access to resources, equity and sustainable development.

   Implications of climate related risks on the achievement of the Millennium Development Goals.

Proposed timeline

September 2008	Decision by IPCC plenary for a scoping meeting on the Special Report
February/March 2009	Scoping workshop for the Special Report
2009	Approval of scoping paper by plenary
2009	Selection of authors by the IPCC Bureau
2009	First lead authors meeting
2010	First draft, expert review
2010/11	Expert and Government review
1st half 2011	Approval by plenary

ANNEX I

Overview of types of scientific information available on the management of extreme events to advance climate change adaptation:

1) Disaster trends: information is published by CRED, MunichRe, SwissRe, International Federation of Red Cross and Red Crescent Societies and others, compiled for the ISDR system Global Assessment Report on Disaster Risk Reduction and also published by organizations such as World Bank Disaster Risk Management, UN Office for the Coordination of Humanitarian Affairs, United Nations Development Programme.

2) Hazard information: is available from World Climate Data Center, Asheville, and other meteorological and hydrological sources.

3) Vulnerability and drivers of risk: articles are published by academic institutions and in peer-reviewed journals such as the Benfield Hazard Research Centre's Working Papers in Disaster Studies and Management, Institute of Development Studies, Overseas Development Institute, and United Nations University Press, as well as books by authors such as Bendimerad, Benson, Bhatt, Burton, Cannon, Cardona, Davis, Dixit, Enarson, Lavell, Moench, Pelling, Shaw, Vogel, Wisner, and many others.

4) Management of hydrometeorological extremes: Specialized, peer-reviewed, scientific literature is available from disaster management journals, such as *Disaster Prevention and Management, Disasters, Meteorological Applications, Journal of Coastal Research, Australian Journal of Emergency Management, Geophysical Research Abstracts, etc.* Such journals feature articles on the management of the following hydrometeorological hazards: Floods, debris and mudflows; tropical cyclones, storm surges, wind, rain and other severe storms, blizzards, lightning; drought, desertification, wildland fires, temperature extremes, sand or dust storms; permafrost, snow avalanches

5) Policy: publications by disaster risk academic and research organizations, such as Benfield Hazard Research Centre, Institute of Development Studies and the Flood Hazard Research Centre; international organizations, such as International Federation of Red Cross and Red Crescent Societies, UNDP, UN/ISDR, World Bank; and nongovernmental humanitarian organizations such as ActionAid, Care, Oxfam, Provention Consortium, Save the Children, Tearfund, among others.

6) Tools: early warning systems and community-based risk assessment, among other practices, are reviewed in compendia of tools published by nongovernmental organizations and undergo peer review, such as Provention Consortium, or international organizations such as International Federation of Red Cross and Red Crescent Societies.

7) Practice: reports are published by nongovernmental and research organizations, such as Provention Consortium, Institute of Development Studies and Institute for Social and Environmental Transition; international organizations such as African Development Bank, International Federation of Red Cross and Red Crescent Societies, International Research Institute for Climate and Society, and World Bank. Government sources assess lessons learned from particular disaster events such as Hurricane Katrina and the United Kingdom 2007 floods. Governments report on their initiatives to implement various international agreements, such as the Hyogo Framework for Action and UNFCCC. A number of development and environment journals are also relevant: *International Centre for Integrated Mountain Development, Natural Resources Journal, Geophysical Research Abstracts, World Development, Environment and Urbanisation, Global Environmental Change, Phil. Trans.R. Soc.*

A preliminary bibliography is given in the GECHS report Disaster Risk Reduction, Climate Change Adaptation and Human Security

Endnotes

[1] UNFCCC Decision 1/CP.13; Bali Action Plan. See FCC/CP/2007/6/Add.1, paragraph 1(c) (ii and iii).

[2] UNFCCC SBSTA twenty-eighth session; Nairobi work programme on impacts, vulnerability and adaptation to climate change. See FCCC/SBSTA/2008/ö-13/Rev.1, paragraphs 47 and 48.

[3] IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Chapter 20.5 pg 821.

[4] IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Chapter 20.9 pg 837.

[5] The ISDR is a cooperative system made up of governments, inter-governmental and non-governmental organizations, international financial institutions and technical bodies and networks as well as civil society and private sector—all of which have essential roles to play in disaster risk reduction at global, regional, national and local levels. See www.unisdr.org

[6] IPCC, Intergovernmental Panel Twentieth Session, 2003. "Framework and Set of Criteria for Establishing Priorities for Special Reports, Technical Papers and Reports on Methodological Issues."

[7] EM-DAT: The OFDA/CRED International Disaster Database. See http://www.emdat.be/Documents/Publications/Annual%20Disaster%20Statistical%20Review%202007.pdf

[8] Referred to in IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Chapter 20.8 pg 832.

[9] See UNFCCC Article 2 and 4.8.

[10] O'Brien, K. et al. 2008. Disaster Risk Reduction, Climate Change Adaptation and Human Security. Report prepared for the Royal Norwegian Ministry of foreign affairs by the Global Environmental Change and Human Security (GECHS) project, GECHS Report 2008:3.

[11] From the Chair's Summary of the ISDR system's first session of the Global Platform: "The Intergovernmental Panel on Climate Change and ISDR system should collaborate on the preparation of a special report on adaptation, disaster risk reduction and sustainable development." See ISDR/GP/2007/6 at http://www.preventionweb.net/globalplatform/first-session/docs/session_docs/ISDR_GP_2007_6.pdf

[12] Hazard phenomena may include complex bio-geophysical phenomena such as landslides, flash floods, glacial lake outbursts, sand storms, wildland fires, storm surge, pest outbreaks and epidemics.

[13] For example, case studies could illustrate the integration of disaster risk reduction and climate change adaptation strategies in a Small Island Developing State, a successful drought risk reduction effort that strengthened early warning in a Least Developed Country, or the use of risk transfer tools, such as insurance and micro-credit, in a hurricane-affected community.